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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

17 NML CAPITAL, LTD.,

18 Plaintiff,

19 vs.

20 SPACE EXPLORATION
21 TECHNOLOGIES CORP., aka
22 SPACEX, a Delaware corporation; THE
23 REPUBLIC OF ARGENTINA, a
24 foreign state, including its *COMISIÓN*
NACIONAL DE ACTIVIDADES
ESPAZIALES, aka CONAE, a political
25 subdivision of the Argentine State; and
26 DOES 1-10,

27 Defendants.

28 CASE NO. 14 CV 02262-SVW-Ex

Hon. Stephen V. Wilson

**DECLARATION OF KEITH
VOLKERT**

Filed concurrently with (1) Notice of Motion and Motion for Leave to Serve Discovery Prior to Rule 26(f) Conference and (2) Declaration of Harold A. Barza

Hearing Date: March 9, 2015
Time: 1:30 p.m.
Courtroom: 6

Complaint Filed: March 25, 2014

DECLARATION OF KEITH J. VOLKERT

I, Keith J. Volkert, do hereby declare as follows:

1. I am an independent consultant in the satellite industry. I have personal knowledge of the facts stated herein and, if sworn as a witness, could and would testify competently to them.

2. I have 46 years of experience in the design, integration and testing of scientific and communications satellites. I hold a Bachelor of Science Degree in the field of Aeronautical and Astronautical Engineering from Northrop University. I was a senior technical specialist at Jet Propulsion Laboratory (JPL) for ten years, where I worked on the Viking Mars Orbiters, two Voyager missions and the Galileo Spacecraft that recently completed its successful mission to Jupiter. Afterwards, I worked at COMSAT Laboratories for two decades, where I worked my way up through the ranks and eventually held the position of Managing Director. While at COMSAT Laboratories, I led Proposal Evaluation teams, and provided consulting support and on-site construction monitoring services to many satellite owners and operators, including Intelsat, Inmarsat, SES, ICO, JCSAT, SATMEX, AsiaSat, Swedish Space Corporation, Nilesat, Arabsat, Palapa, Koreasat, Orion and others. In 2001, I started Satellite Consulting, Inc., an aerospace consulting firm dedicated to providing consulting services to many of the major owner/operators in the communications satellite industry, including SkyPerfect-JSAT Corporation, Hughes Network Systems (Spaceway), SES-New Skies BV, SiriusXM Satellite Radio, ICO, DirecTV, Telenor, AsiaSat and others. I am currently the owner and CEO of Satellite Consulting, Inc.

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3. I have extensive experience participating in launch services evaluations, negotiations, interface coordination activities, and launch preparation campaigns on most current launch systems, including Falcon 9, Commercial Titan, Ariane 4 and 5, Shuttle (STS), Atlas/Centaur, Delta II, Delta III, Sea Launch, Proton and Long March. I have provided consulting services to SpaceX customers that purchased Falcon 9 launches, including participating in SpaceX design reviews and providing launch site support services. A true and correct copy of my current resume is attached hereto as Exhibit A.

4. I have been retained to review available information related to the upcoming launches of two Argentine SAOCOM (Satélite Argentino de Observación CON Microondas, Spanish for Argentine Microwaves Observation Satellite) satellites via SpaceX's Falcon 9 launch vehicles, and to render my opinion as to the whether Argentina's contractual launch services rights can be marketed and sold to other parties prior to the launch dates. According to available information, these launches are to take to place at Vandenberg Air Force Base in September 2015, and September 2016. As set forth below, it is my opinion that while a purchaser of Argentina's launch services rights would need to begin making preparations for the September 2016 launch soon given the amount of time normally required for a satellite launch campaign, sufficient time remains to market the rights to the 2016 launch. With regard to the September 2015 launch, assuming a purchaser could be identified with a satellite having parameters similar to Argentina's satellite, there might be sufficient time for the purchaser and SpaceX to prepare for the launch if the sale occurred in the near future. It is my opinion that there would be a substantial demand for the 2015 launch slot due to the current market shortage of launch slots and the desirability of the orbit. *40*

5. To prepare to make this declaration, I reviewed the publically available SpaceX flight manifest posted on <http://www.spacex.com/missions> and the publically available CEOS Database on <http://database.eohandbook.com/database/missiontable.aspx>.

6. Preparations for a satellite launch normally begin eighteen to twenty-four months prior to the opening of the scheduled launch period (the launch period is a three-month time period, as customary in the industry, in which the launch services provider agrees to launch a launch services right holder's satellite). Normally, at around fifteen months before launch, the satellite's parameters, such as its mass, and desired orbital parameters for final orbit placement for low earth orbit missions, are delivered to the launch services provider. Additionally, around this time, the launch services provider is given additional information, such as: finite element models (FEM), which are used in complex computations to predict effects on the satellite caused by a variety of sources, such as vibrations from the launch vehicle's engine during liftoff; a thermal model of the satellite which identifies specific satellite hardware that may be adversely affected by temperature; and, a physical representation or computer aided design (CAD) model to verify clearances inside the launch vehicle fairing (a cone-shaped compartment at the front of a rocket which protects the rocket's payload during launch). The reason that these inputs are delivered fifteen months prior to launch is so that the launch services provider can assess the compatibility of the satellite with the launch vehicle and, if needed, cause any adjustments to be made to the launch vehicle or satellite. To make this compatibility assessment, the launch services provider will communicate with the holder of the launch services rights on a regular basis, beginning at around fifteen months before

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launch, regarding various technical issues that can arise that may require redesigning the satellite.

7. If after analyzing the satellite and orbital parameters the satellite is found to be compatible with the launch vehicle, then the time required to prepare for the satellite launch can be six months or less. Thus, determining that the satellite is compatible with the launch vehicle is one of the most important milestones for a holder of launch services rights to accomplish. In order for a potential purchaser of launch services rights to determine whether the satellite it seeks to launch is compatible with the applicable launch vehicle, the purchaser would need to be informed as to the spatial and acceleration limitations imposed on its satellite by the launch vehicle.

8. Prior to the start of the launch period, it is common for a launch services provider to substitute the launch vehicle originally contracted for with another launch vehicle due to compatibility or schedule issues with the satellite, or for other reasons. Launch vehicles, such as the Falcon 9 rocket, are fairly standardized and can be used to launch a variety of satellites with only minor alterations to the launch vehicle.

9. The Vandenberg Air Force Base launch site is used to launch satellites into polar, low Earth orbits via SpaceX's Falcon 9 rockets. There are several potential uses for polar orbits, including oil and gas exploration, weather monitoring, and Earth mapping. Additionally, the number of launch services providers that will launch privately-owned or U.S. government satellites into polar orbits is extremely limited. Thus, there is likely market demand for launch services rights that entitle the holder to a launch at the Vandenberg Air Force Base. 60

10. Due to the close-knit community of buyers and sellers of launch services rights, it is relatively simple to advertise the sale of said rights. Advertisements placed in space industry magazines will likely draw interest from potential purchasers, and such magazines will also likely report on the availability of a SpaceX launch slot. Furthermore, the flight manifests of various satellite launch providers will reveal suitable candidates that may want to move up their launch slot to an earlier date. A seller of launch services rights would reach out to these candidates. Once the technical details of Argentina's launch services rights are known, potential purchasers can be quickly provided with the information they need to assess whether they want to purchase said rights.

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Los Angeles, California on the 9th day of February, 2015.



Keith J. Volkert